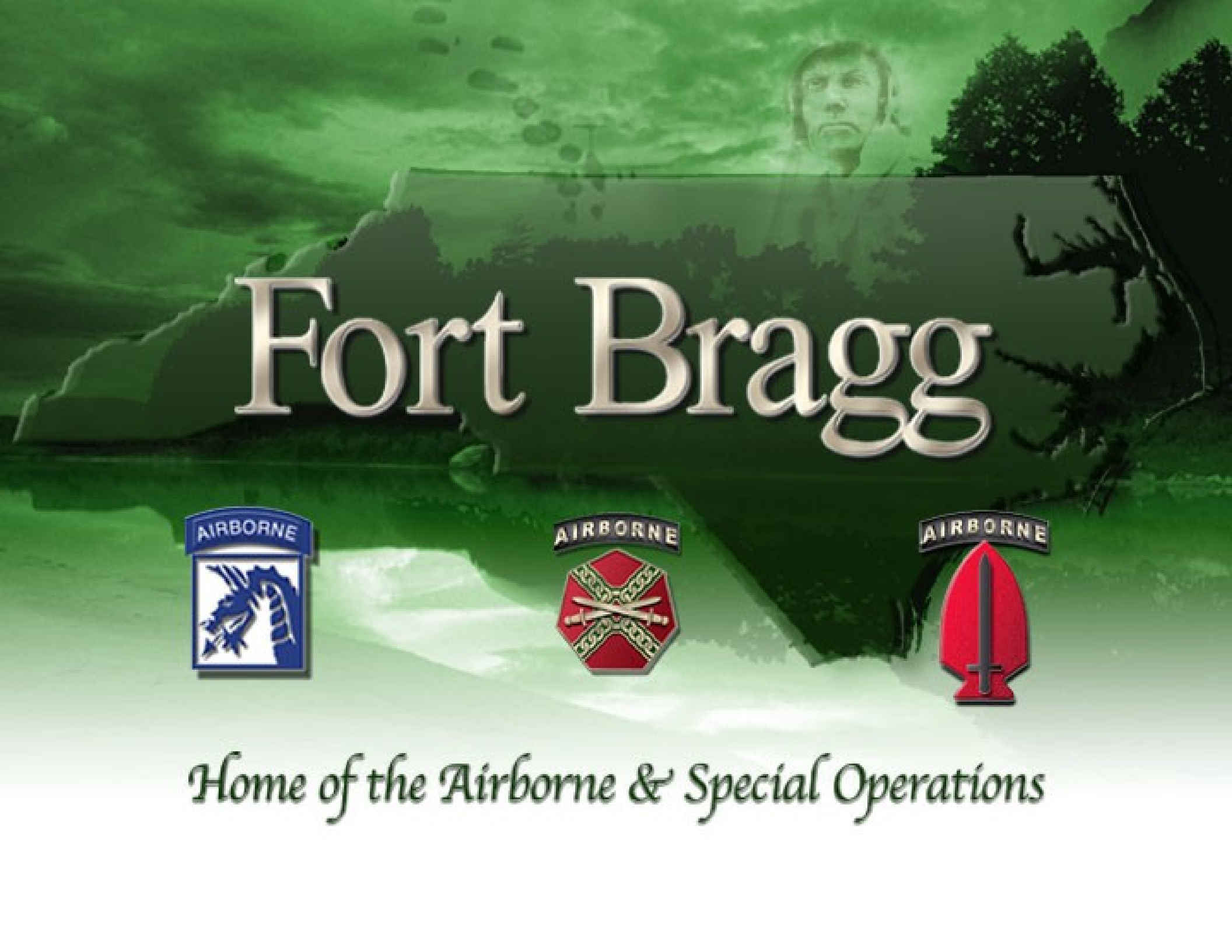

Fort Bragg
AIRBORNE
AIRBORNE
AIRBORNE
Home of the Airborne & Special Operations

Planning for Installation Transformation: Sustainable Planning

FORT BRAGG - "More Than A City"

Size: 251 Square Miles (160,789 Acres)

- **Office Buildings: 30.2M SF**
- **Shopping Centers: 11**
- **Restaurants: 28**
- **Railroad Lines: 19 miles**
- **Roads and Utilities**
  - **784 Lane Miles Paved Roads**
  - **Utilities: Water, Waste Water, Electricity, Natural Gas**
- **IT Structure**
  - **511 miles fiber optic cable**
  - **11,281 miles copper cable**
- **Simmons Army Airfield**
- **Camp Mackall**
- **Museums: 2**

- **Hospital: 1**
  - **Medical Clinics: 4**
  - **Dental Clinics: 5**
- **Schools**
  - **Elementary: 7**
  - **Junior High/Middle: 2**
- **Army Family Housing**
  - **4,643 On-Post**
  - **250 Off-Post**

  (Approximately 27,000 Soldiers Reside Off-Post)
- **Churches: 11**
- **Consolidated Library: 1**
- **Child Care Centers: 4**
- **Recreational Facilities: 183**

FORT BRAGG POPULATION

Fort Bragg Demographic Profile	Number
Active Duty Military	45,232
Annual Reserve Components	30,466
Temporary Duty Students	2,780
Mobilized Soldiers Assigned	2,742
Civilian Employees (APF, NAF, etc.)	7,956
Contract Employees	1,843
Active Duty Family Members	73,420
Retirees & Family Members	89,131
Total Population Supported	253,570

ORGANIZATIONS SUPPORTED BY FORT BRAGG GARRISON

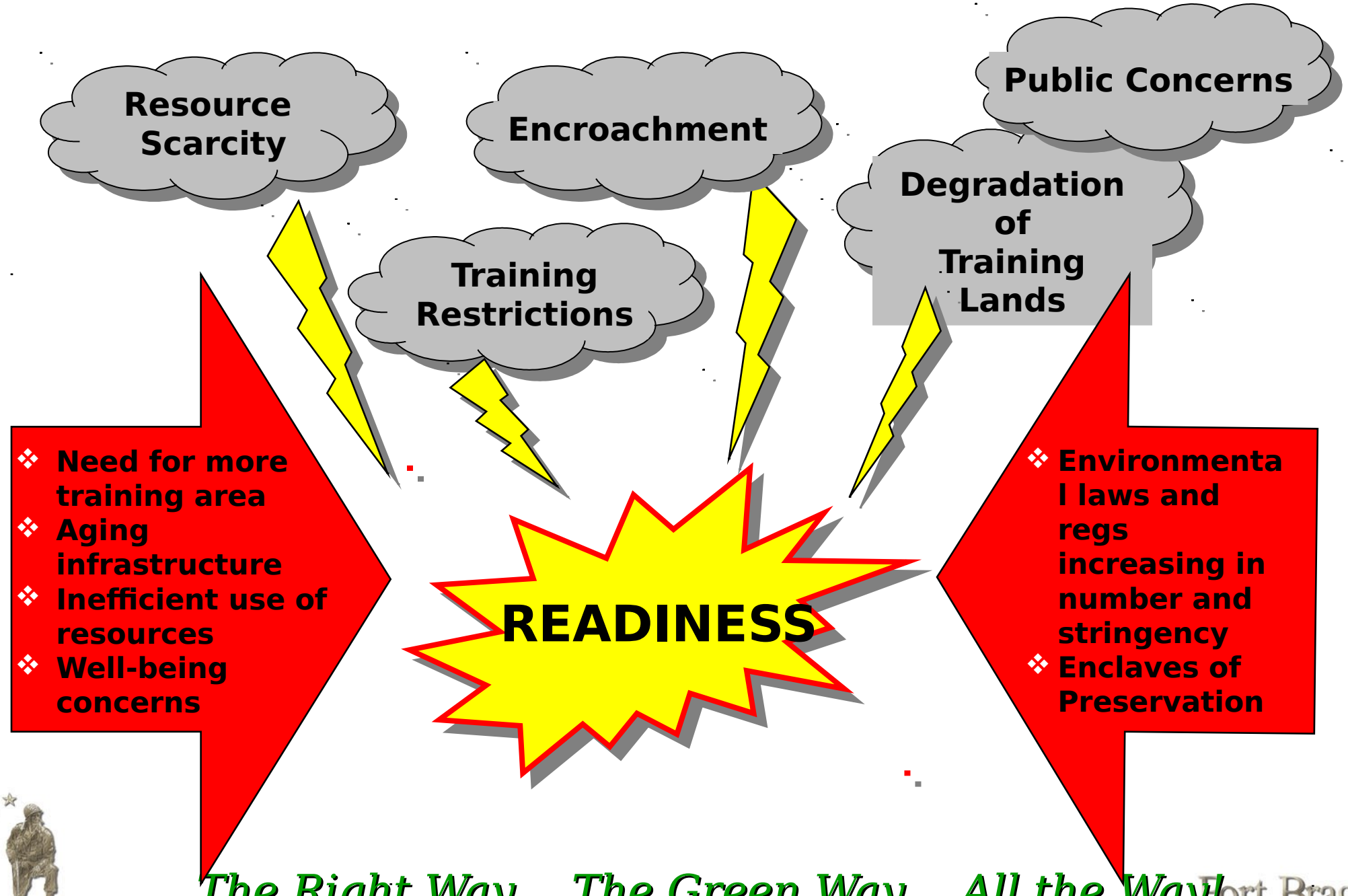
XVIII Airborne Corps
1st Battlefield Coordination Detachm
2d Judicial Circuit
4th Brigade, 78th Division
10th Military Police Battalion (Airbor
(Criminal Investigation Division)
18th Weather Squadron
249th Engineer Battalion
902nd Military Intelligence Group
Airborne & Special Operations Test
Directorate
Army/Air Force Exchange Service
Defense Automated Printing Service
Defense Commissary Agency
Defense Reutilization & Marketing O
Fort Bragg Schools
Fort Bragg Branch Veterinary Servic
Forward Support Office - Bragg
General Services Administration, Fe
Supply Service
Grounds Intelligence Support Activi

Joint Special Operations Command
National Imagery And Mapping Agency
North Carolina Air Force And Special
Operations Area Office
North Carolina Army National Guard
Mobilization & Training Equipment Si
US Army Special Operations Command
US Army Special Forces Command
US Army Civil Affairs/ Psychological
Operations Command
US Army John F. Kennedy Special Wa
Center And School
US Army Audit Agency, Bragg Field Offi
US Army Aviation & Missile Command
US Army Dental Activity
US Army Logistics Assistance Office
(Army Materiel Command)
US Army Parachute Team
US Army Reserve Center
US Army Trial Defense Service
Womack Army Medical Center

INSTALLATION PRIORITIES

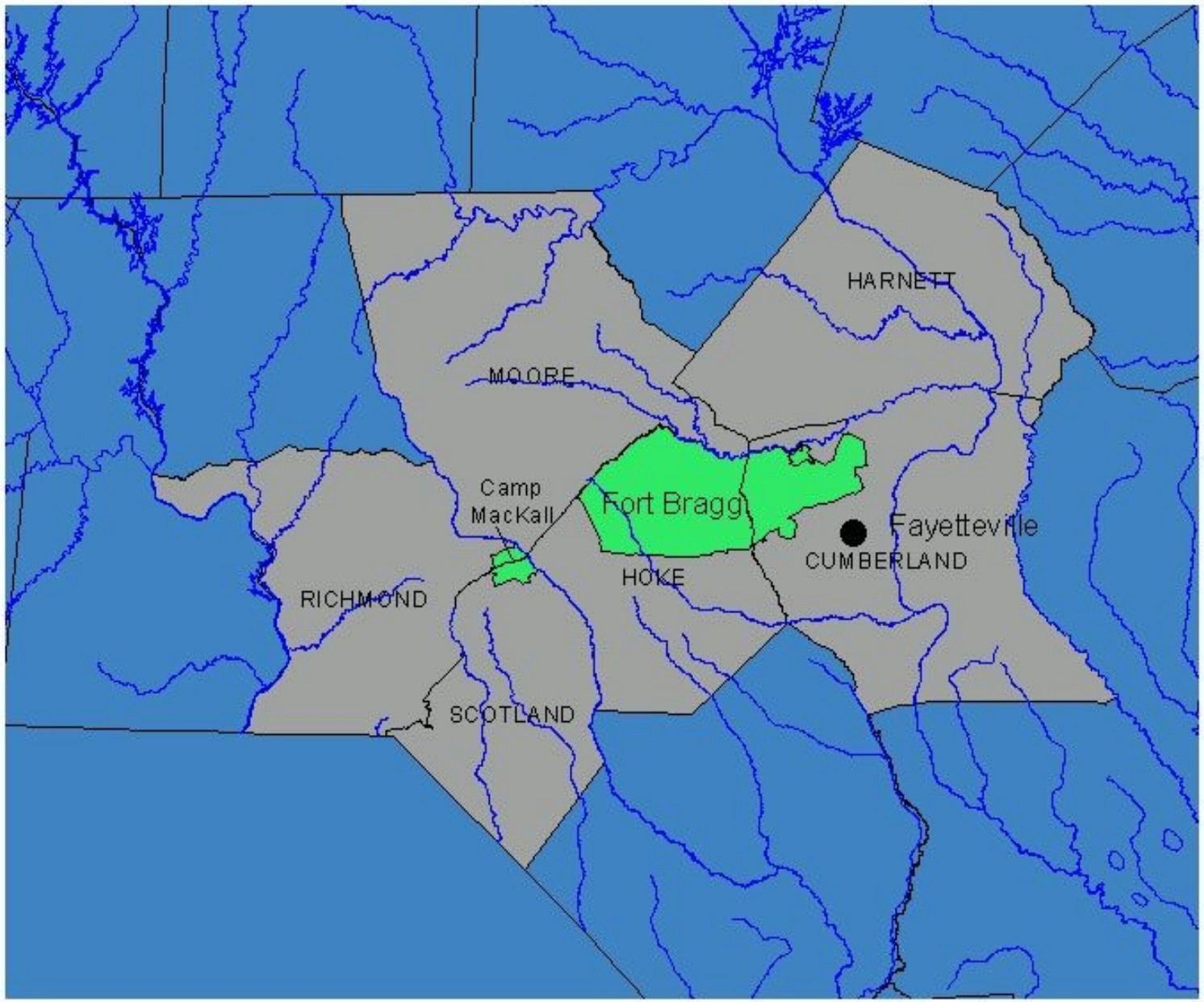
1. AC Deployments / RC Mobilization and Demobilization
2. Force Protection
3. Budget
4. Base Realignment & Closure (BRAC) 05 Input
5. Family / Community Support
6. Environmental Sustainability
7. Productivity Management

The Situation

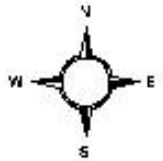


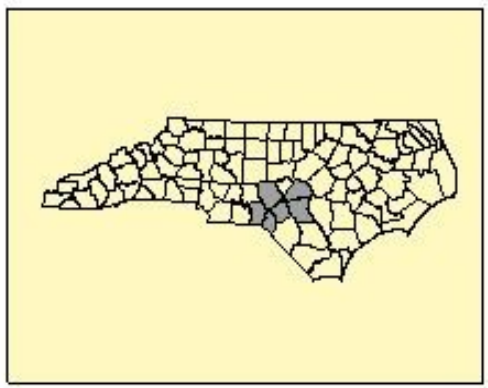
The Right Way….The Green Way….All the Way!

Area of Operations / Area of Interest



Major Rivers
Area of Operations
Area of Interest
NC Counties





30 0 30 60 Miles

Sustainability

What is sustainability to Fort Bragg?

A pro-active approach to ensure the long-term viability and integrity of the mission by minimizing resource needs, reducing environmental impacts, and managing resources while providing realistic training environments.

Goals

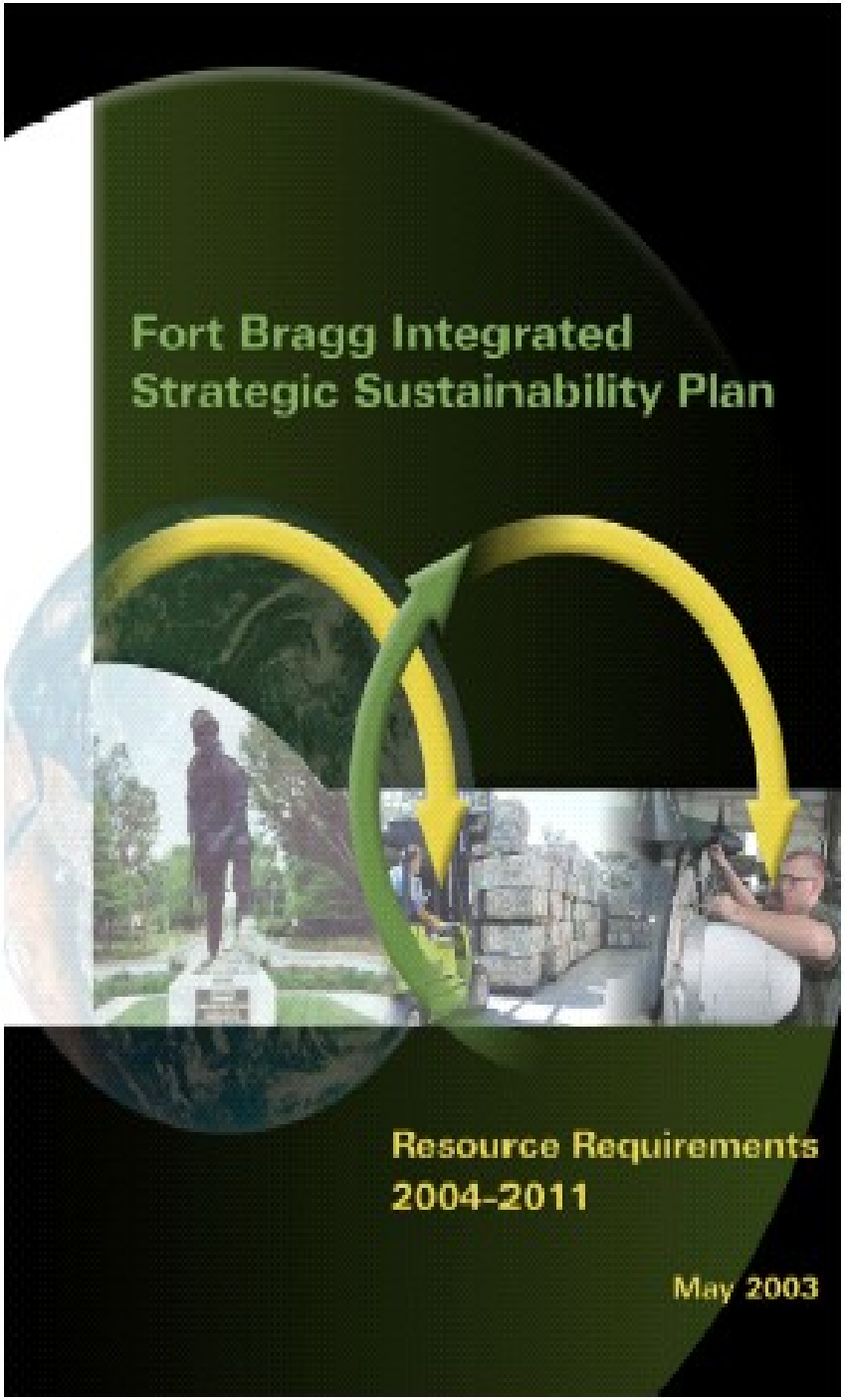
1. Reduce amount of water taken from Little River by 70% by 2025, from current withdrawals of 8.5 million gallons/day. (PWBC)
2. All water discharged from Fort Bragg will meet or exceed North Carolina state high quality water (HQW) standard, by 2025. (PWBC/RBC)
3. Landfill waste to be aggressively reduced toward 0 by 2025.(PWBC)
4. Meet minimum platinum standard for all construction by 2020 program, and renovate 25% of all existing structures to at least a bronze standard by 2020 (using the Sustainable Project Rating Tool – SPiRiT).(PWBC)
5. Adopt compatible land use laws/regulations with local communities by 2005. (PWBC/RBC)
6. Reduce energy use in accordance with Executive Order 13123.(PWBC)

Goals (continued)

7. Develop and implement an effective regional commuting program by 2015.(RBC/PWBC)
8. Reduce the use of both gasoline and diesel in the non-tactical fleet by 70 percent by 2015 and 99 percent by 2025. (RBC/PWBC)
9. Develop an integrated environmental education program for Fort Bragg, its surrounding communities and interested parties.(RBC)
10. Work towards 100% Environmentally Preferred Purchasing by 2025 for all purchases, including government purchase card, contract, and military requisition. (RBC/DOC)
11. Implement a scientifically-based conservation program for natural and cultural resources compatible with military readiness and training.(PWBC)

Sustainable Fort Bragg Vision

- In order to maintain the Fort Bragg legacy and to continue to train troops to standard, it is necessary to integrate long-term sustainable planning into the day-to-day operations of the installation. Our vision is an installation that will:
  - Provide soldiers with the necessary training to ensure mission success without compromising local or regional environmental quality;
  - Be recognized as a world leader in practicing global citizenship and promoting sustainability values;
  - Continuously seek new technologies, share lessons learned, and promote the exchange of ideas with the region and communities;
  - Restore and protect these valuable assets for future generations, as nationally recognized stewards of significant cultural and natural resources; and
  - Be an integral part of a healthy and thriving region, where all enjoy a high quality of life and access to vital resources.



Fort Bragg Integrated Strategic Sustainability Plan

Resource Requirements
FY04-FY11

Plan elements were coordinated with Fort Bragg Team Members during facilitated workshops in December 2002 and January 2003. Information collected during those workshops and prepared in previous meetings by team members was incorporated into Goal Summary and Objective Summary sheets. This information is presented in this document.

Goal Details

GOAL

Challenges

Current Condition

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025; and
Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina State High Quality Water (HQW) standard by 2025.

Challenge

Potential sources for Fort Bragg's water consumption have been steadily declining (both in quantity and quality) due to overuse. Contamination of regional water resources, particularly by sediments, is a critical concern to North Carolina because of the economic impacts associated with destruction of fish habitats, treatment of water to drinking quality, and the decrease of drinking water reservoir holding capacity. How can Fort Bragg reduce its dependence on these vulnerable sources and provide premium quality drinking water, as well as the "right" quality of water for other uses, without aggravating future regional water supply issues? How can Fort Bragg minimize the future costs and potential operational restrictions associated with water pollution, while improving regional water quality?

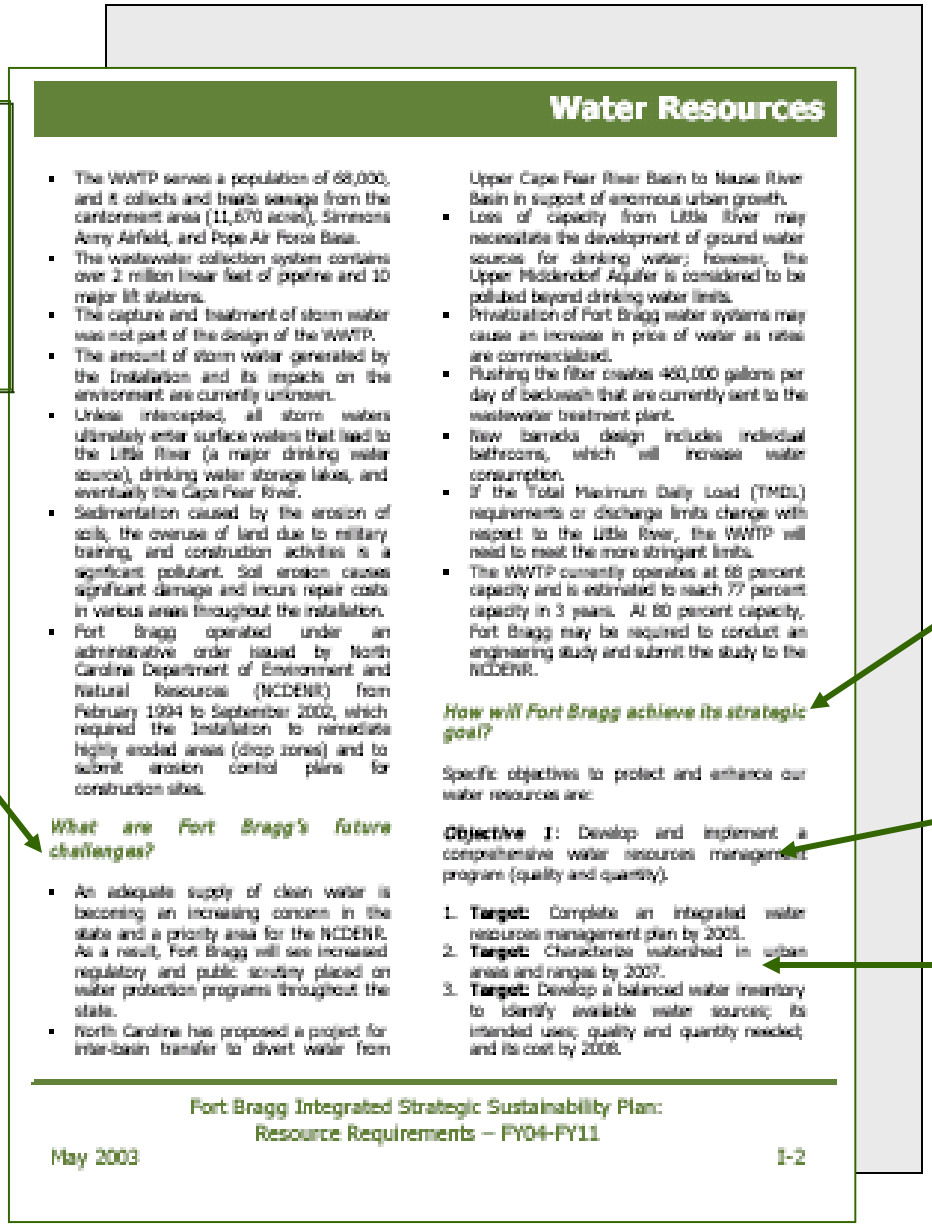
Where is Fort Bragg today?

- Fort Bragg's primary drinking water source is the Little River, part of the Cape Fear River Basin.
- All water currently used in the cantonment area (except one of the two golf courses) is potable water drawn from the Little River.
- Fort Bragg's water consumption has increased 39 percent without an increase in population.
- Fort Bragg does not have a formal water conservation program to monitor real-time demand, to optimize distribution systems, to educate the public, and to control peak consumption.
- Fort Bragg does not have all the data needed to quantify our water sources.
- A severe regional drought in 2002 caused a significant decrease in the Little River, and as a result, the Installation purchased water from city of Fayetteville to meet mission and quality of life requirements.
- The water treatment plant (WTP), which was built in 1918 and upgraded in 2000, has a plant capacity of 16 million gallons/day.
- Fort Bragg's drinking water distribution system contains two million linear feet of pipeline.
- Fort Bragg's wastewater treatment plant (WWTP) was built in the 1940s and rebuilt in 1991. It currently operates at a maximum daily flow of 2 million gallons/day and discharges approximately 5.3 million gallons/day to the Little River, which is one mile downstream of the drinking water treatment plant.
- The WWTP has a history of non-compliance with its National Pollutant Discharge Elimination System (NPDES) Permit

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

May 2003 I-1

Expected Future Challenges



Water Resources

- The WWTP serves a population of 68,000, and it collects and treats sewage from the cantonment area (11,670 acres), Simmons Army Airfield, and Pope Air Force Base.
- The wastewater collection system contains over 2 million linear feet of pipeline and 10 major lift stations.
- The capture and treatment of storm water was not part of the design of the WWTP.
- The amount of storm water generated by the Installation and its impacts on the environment are currently unknown.
- Unless intercepted, all storm waters ultimately enter surface waters that lead to the Little River (a major drinking water source), drinking water storage lakes, and eventually the Cape Fear River.
- Sedimentation caused by the erosion of soils, the overuse of land due to military training, and construction activities is a significant pollutant. Soil erosion causes significant damage and incurs repair costs in various areas throughout the installation.
- Fort Bragg operated under an administrative order issued by North Carolina Department of Environment and Natural Resources (NCDENR) from February 1994 to September 2002, which required the Installation to remediate highly eroded areas (drop zones) and to submit erosion control plans for construction sites.

What are Fort Bragg's future challenges?

- An adequate supply of clean water is becoming an increasing concern in the state and a priority area for the NCDENR. As a result, Fort Bragg will see increased regulatory and public scrutiny placed on water protection programs throughout the state.
- North Carolina has proposed a project for inter-basin transfer to divert water from Upper Cape Fear River Basin to Neuse River Basin in support of enormous urban growth.
- Loss of capacity from Little River may necessitate the development of ground water sources for drinking water; however, the Upper Middendorf Aquifer is considered to be polluted beyond drinking water limits.
- Privatization of Fort Bragg water systems may cause an increase in price of water as rates are commercialized.
- Flushing the filter creates 460,000 gallons per day of backwash that are currently sent to the wastewater treatment plant.
- New barracks design includes individual bathrooms, which will increase water consumption.
- If the Total Maximum Daily Load (TMDL) requirements or discharge limits change with respect to the Little River, the WWTP will need to meet the more stringent limits.
- The WWTP currently operates at 68 percent capacity and is estimated to reach 77 percent capacity in 3 years. At 80 percent capacity, Fort Bragg may be required to conduct an engineering study and submit the study to the NCDENR.

How will Fort Bragg achieve its strategic goal?

Specific objectives to protect and enhance our water resources are:

Objective 1: Develop and implement a comprehensive water resources management program (quality and quantity).

1. **Target:** Complete an integrated water resources management plan by 2005.
2. **Target:** Characterize watershed in urban areas and ranges by 2007.
3. **Target:** Develop a balanced water inventory to identify available water sources; its intended uses; quality and quantity needed; and its cost by 2008.

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11

May 2003 I-2

How Will You Reach the Goal?

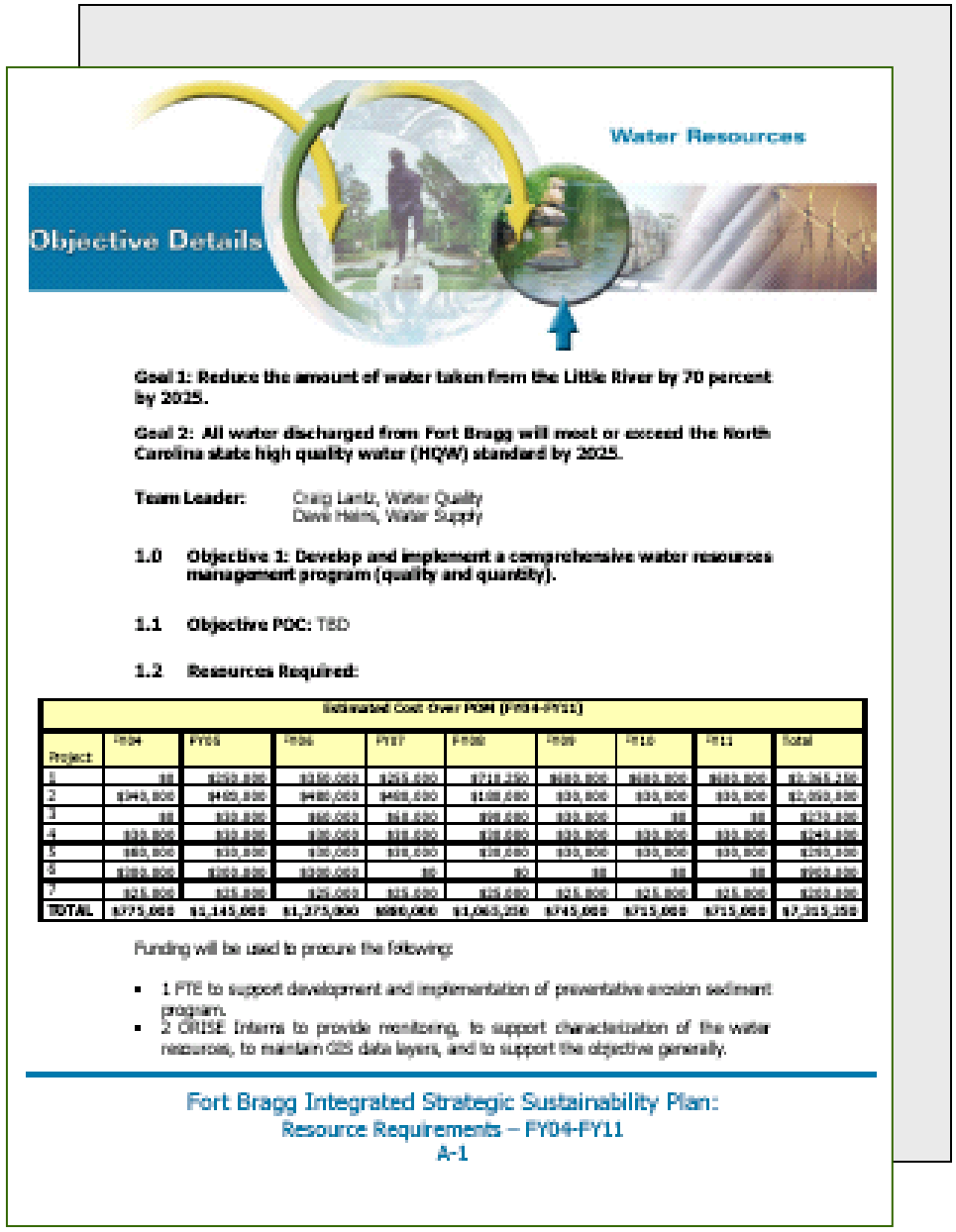
Objective

Targets

The Right Way....The Green Way....All the Way!

Fort Bragg

Objective Details



Water Resources

Objective Details

Goal 1: Reduce the amount of water taken from the Little River by 70 percent by 2025.

Goal 2: All water discharged from Fort Bragg will meet or exceed the North Carolina state high quality water (HQW) standard by 2025.

Team Leader: Craig Lantz, Water Quality
Dave Helm, Water Supply

1.0 Objective 1: Develop and implement a comprehensive water resources management program (quality and quantity).

1.1 Objective POC: TBD

1.2 Resources Required:

Estimated Cost Over POM (FY04-FY11)									
Project:	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total
1	$0	$250,000	$150,000	$265,000	$718,250	$183,800	$183,800	$183,800	$1,965,250
2	$343,800	$400,000	$400,000	$400,000	$108,000	$33,800	$33,800	$33,800	$2,053,000
3	$0	$33,800	$65,000	$33,800	$33,800	$33,800	$0	$0	$233,800
4	$33,800	$33,800	$65,000	$33,800	$33,800	$33,800	$33,800	$33,800	$343,800
5	$65,000	$33,800	$65,000	$33,800	$33,800	$33,800	$33,800	$33,800	$359,800
6	$183,800	$183,800	$150,000	$0	$0	$0	$0	$0	$517,600
7	$33,800	$33,800	$65,000	$33,800	$33,800	$33,800	$33,800	$33,800	$343,800
TOTAL	$775,000	$1,143,000	$1,275,000	$800,000	$1,063,250	$743,000	$713,000	$713,000	$7,315,250

Funding will be used to procure the following:

- 1 PTE to support development and implementation of preventative erosion sediment program.
- 2 ORISE Interns to provide monitoring, to support characterization of the water resources, to maintain GIS data layers, and to support the objective generally.

Fort Bragg Integrated Strategic Sustainability Plan:
Resource Requirements – FY04-FY11
A-1

1. Provides detailed information on PROJECTS

2. Continuity between program managers

3. Easily transferred to EPR's, 1391's etc….

Sustainable Transportation

- Challenge: The state of North Carolina is increasingly concerned about ozone and other air pollutants. How can Fort Bragg minimize future costs and operations restrictions while improving regional air quality?

- Goal: Develop and implement an effective regional commuting program by 2015.
- Goal: Reduce the use of both gasoline and diesel in the the non-tactical fleet by 70% by 2015 and by 99% by 2025.

Sustainable Transportation

- **Objectives:**
  - Develop and implement and effective regional commuting system.
  - Develop and implement compatible land-use and transportation strategies to decrease automobile dependency.
  - Develop and implement strategies to decrease regional air emissions.
  - Develop and implement strategies as alternatives to car travel.
  - Develop a community outreach and awareness partnership to support regional air-quality initiatives and increase use of regional multi-modal systems.
- **Resource Requirements:**

FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
$848K	$559K	$421K	$602K	$326K	$278K	$409K	$308K

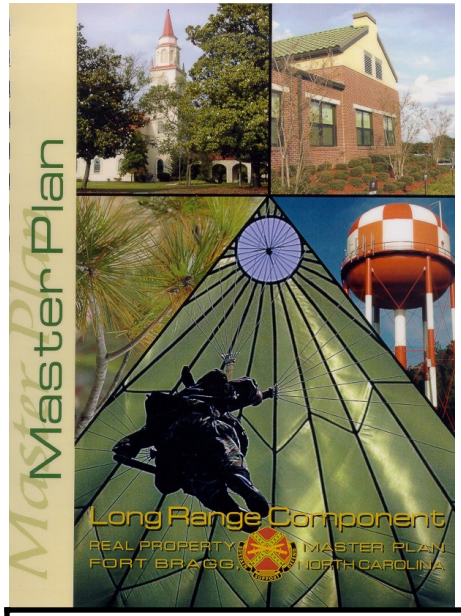
Sustainable Transportation

Priority Projects:

- Comprehensive transportation plan that supports the Master Plan $500k (FY04)
- Install infrastructure and convert non-tactical vehicles and equipment to alternative fuels $30K (FY04); $100K (FY05)

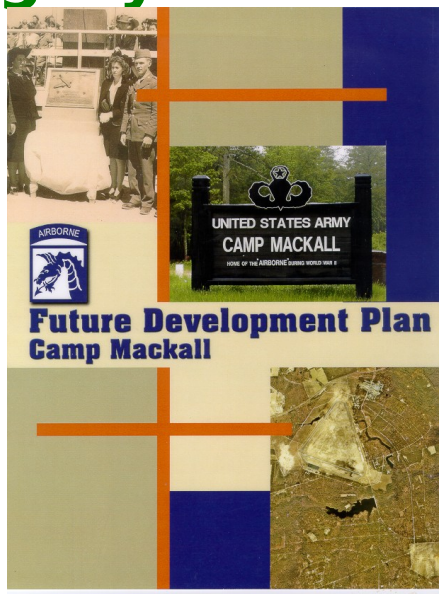
MASTER PLAN UPDATE

- **All Master Plan Components Funded Sep 02--Year End**
- **Master Planning Report Won 2004 Federal Planning Division Award In The Outstanding Sustainable Planning Or Design Project Category.**

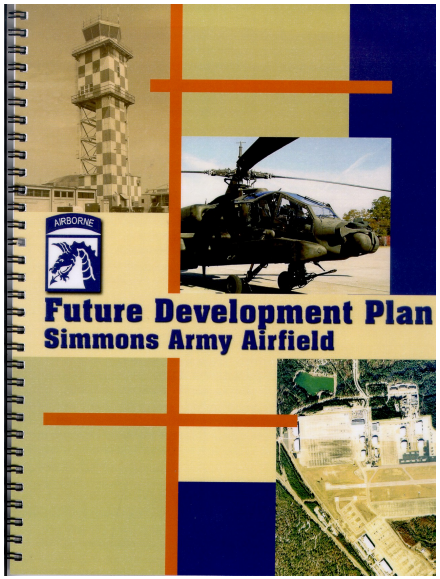


Master Planning Report--Complete

New Aerial Photography--Complete



Mackall Master Plan--Complete



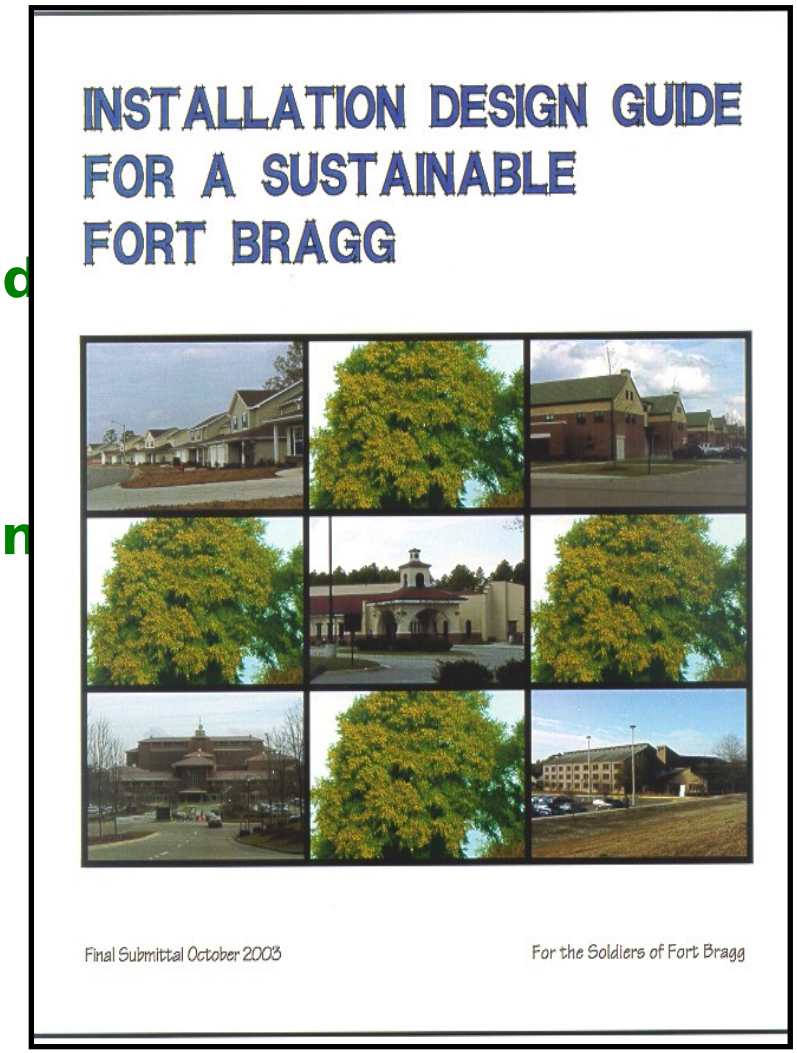
Simmons Master Plan--Complete

STAINABLE INSTALLATION DESIGN GUI

- **Bragg Recently Updated Its IDG To Include Sustainability Criteria:**
  - **Reduce Construction Waste**
  - **Reduce Energy Usage**
  - **Reduce Water Consumption**

- **Currently Updating IDG To Web-Based Document; Final Due - April 2004**

- **We Were Updating Our IDG Before Army Decided To Go To New Installation Design Standards.**



16th MP Barracks

Scope: Design/Build Project. Brigade HQ, Battalion HQ, 7 Company Ops, Police Station and 383 Barracks Spaces.

Estimated Completion Date: FY06

Construction Cost: $42,491,000

Golden Knights Training Facility

Scope: 37,700 SF Operations and Training HQ for the US Army Parachute Team.

Status: 95% Complete.

BOD: 02 Apr 04

Construction Cost: $6,886,134

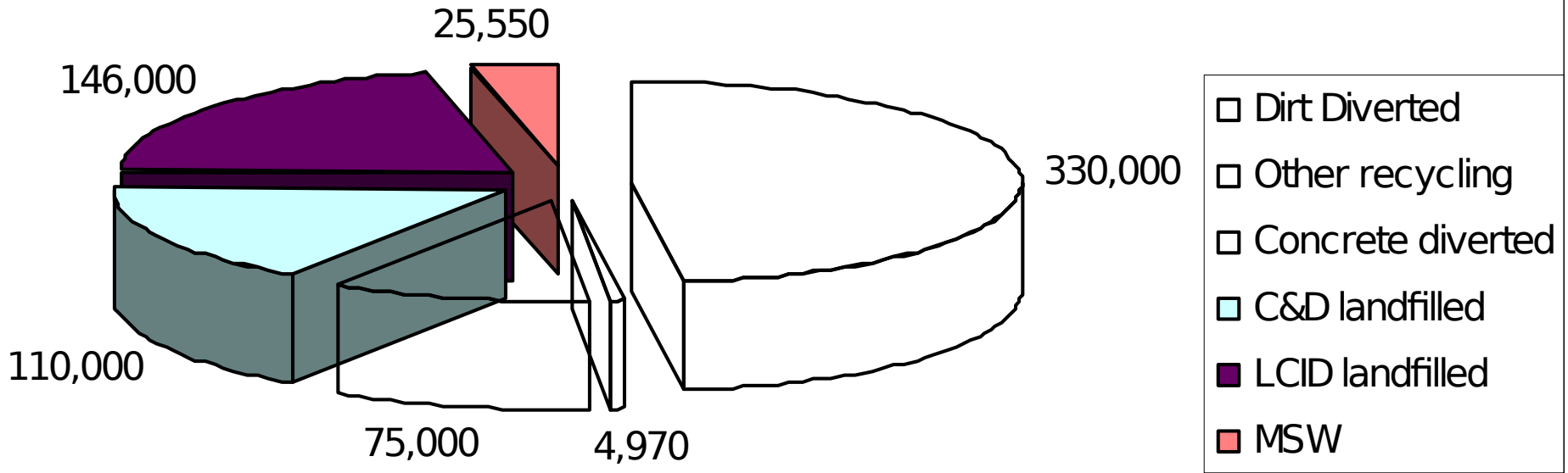
Early Successes

- Demonstration project using Sustainable Desig Standards for storm water and pervious pavement management in FY 2002-03.
  - Design-bid-build... construction awarded Sep 03, construction begins 0 Dec 03
- Low Impact Developmer Workshop – June 2003
  - Demonstration Project resulting from workshop

Early Successes

- Waste Management Team: Landfill diversion for FY02 was ~**59%** due to concrete grinding, soil reclamation, and curb-side recycling.

FY02 Solid Waste Tonnage (691,000 tons)



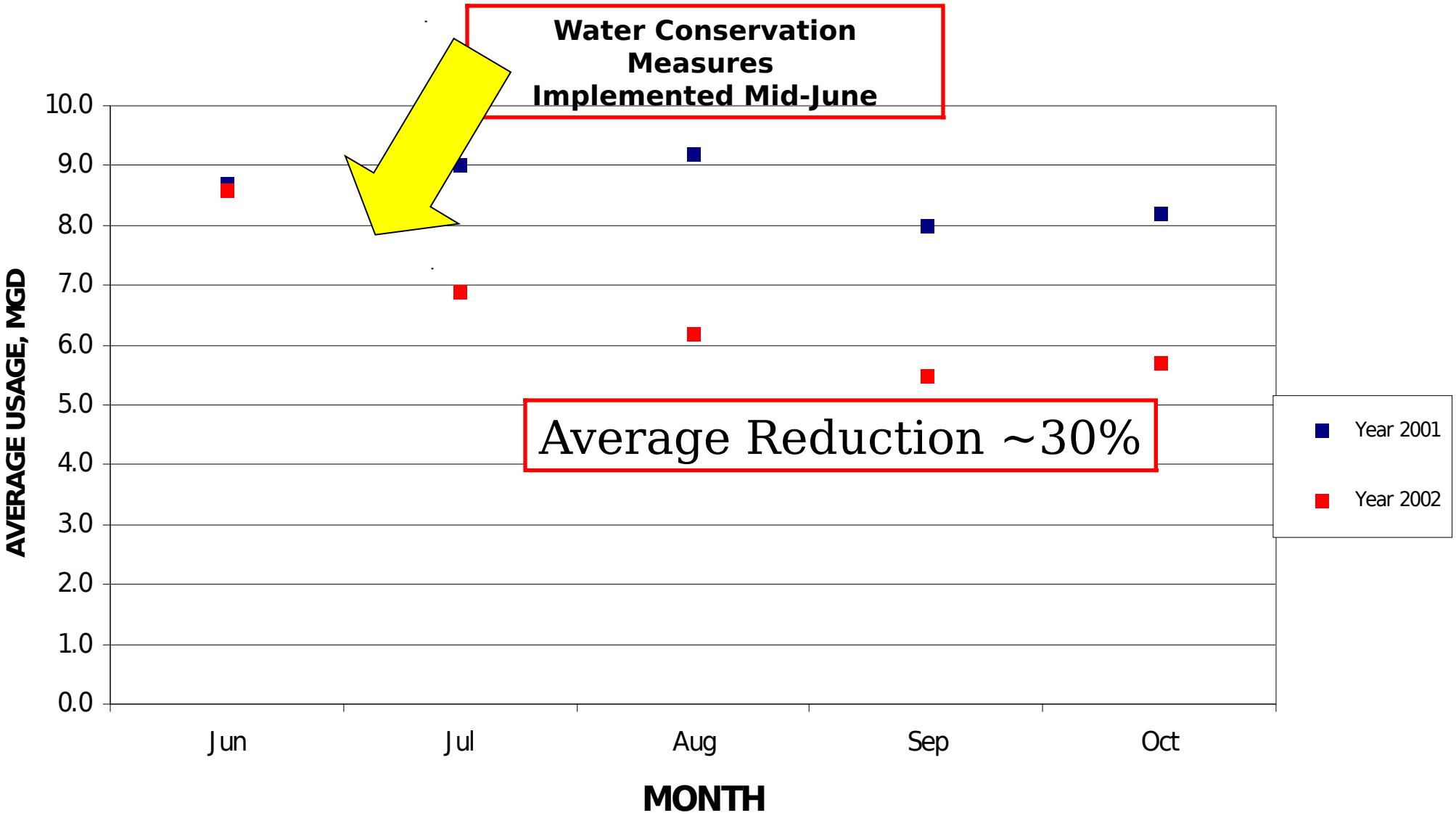
59% Recycled or Diverted

Early Successes

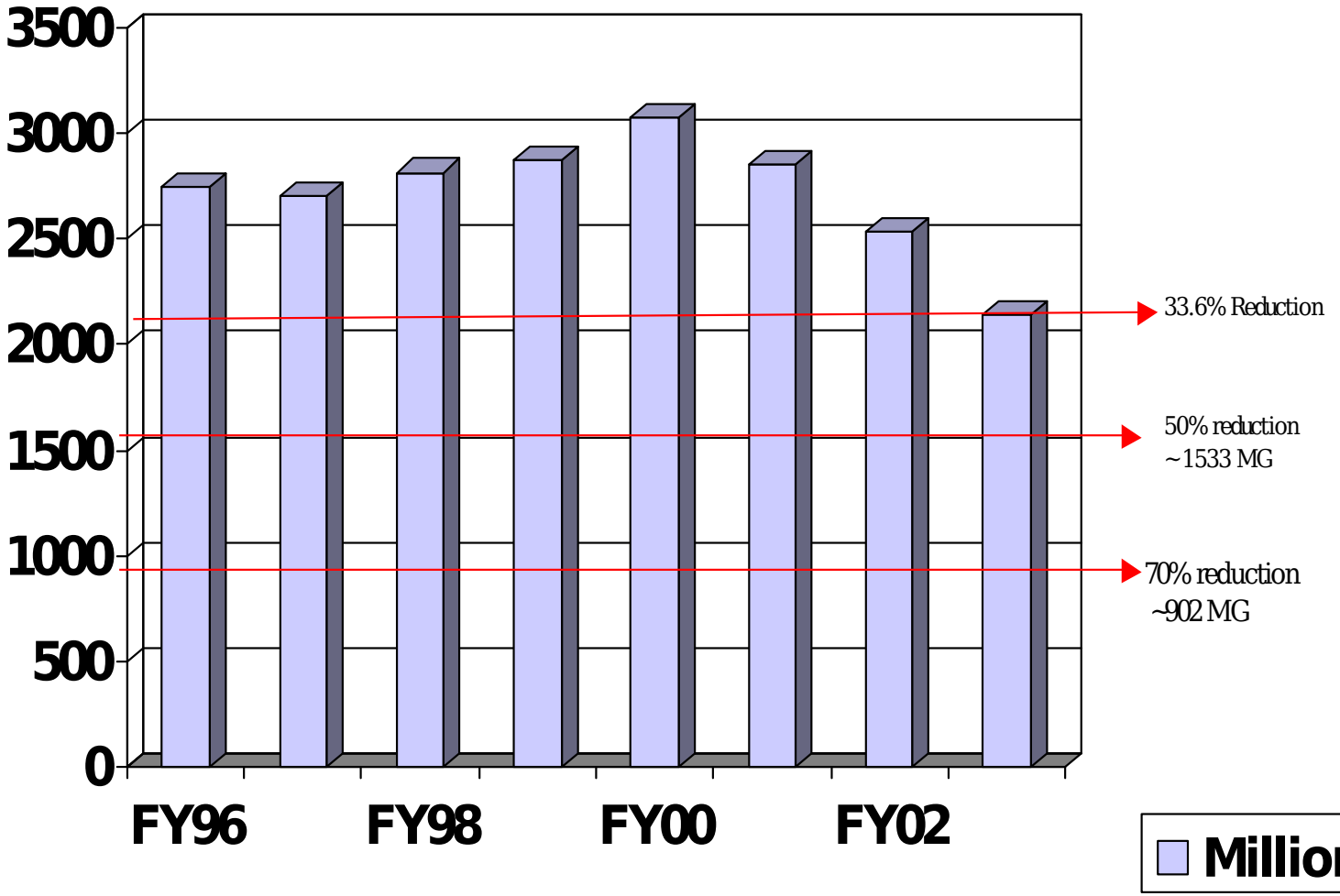
Water Supply Team:

- Initiated feasibility study for reclaiming treated wastewater in a non-potable irrigation system in FY01;
  - Preliminary design completed;
  - Full design under contract (FY04)
- Reduced Potable Water Consumption by 30% in 2002.

Water Treated In Summer 2001 & 2002



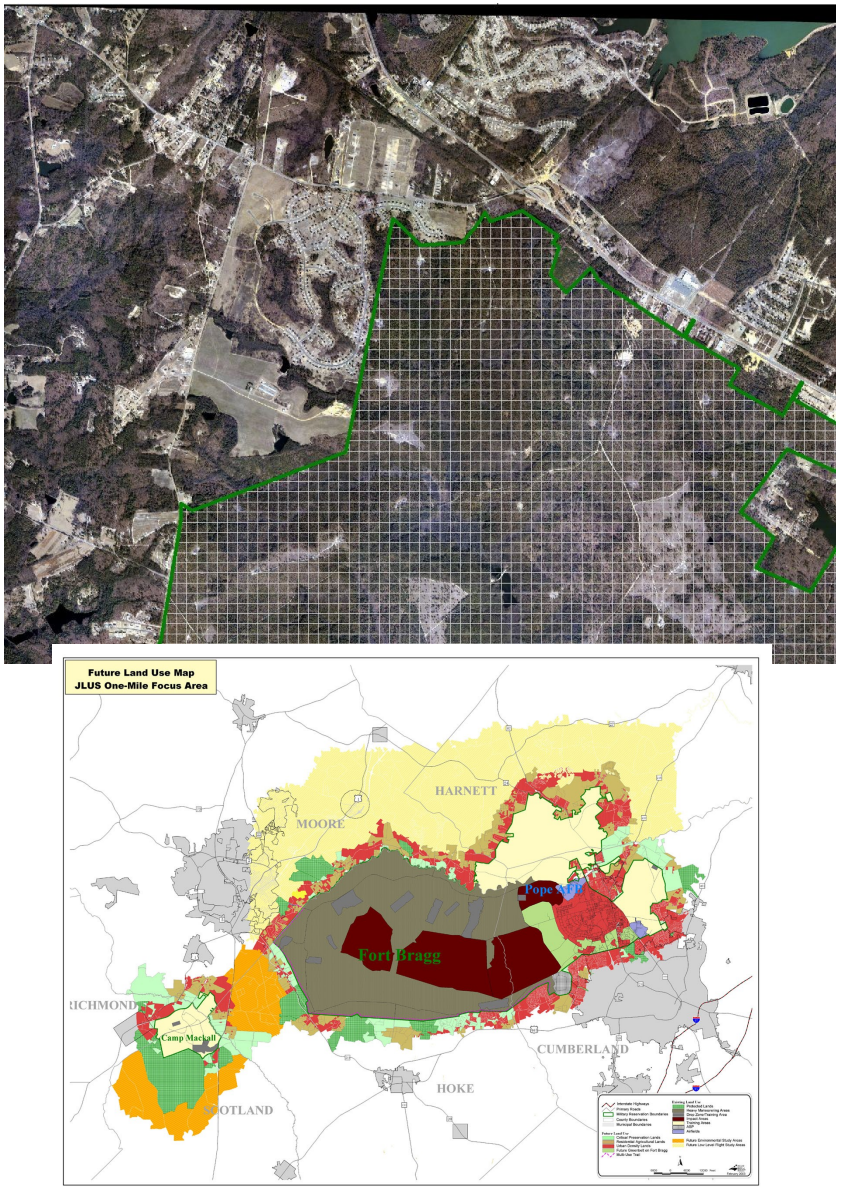
Fort Bragg Water Consumption



Early Successes

Land Use Team:

- Predictive modeling for future land-use along the installation boundary to support on-going Joint Land Use Study and future land use decisions.
- Development of a 6-county (and Fort Bragg) GIS for use by all county and municipality planners to assist in land-use decisions and target conservation opportunities.
- 25-Year Predictive Modeling with Fort Future and CERL



Fort Bragg/Pope Air Force Base Proposed Future Land Use Map

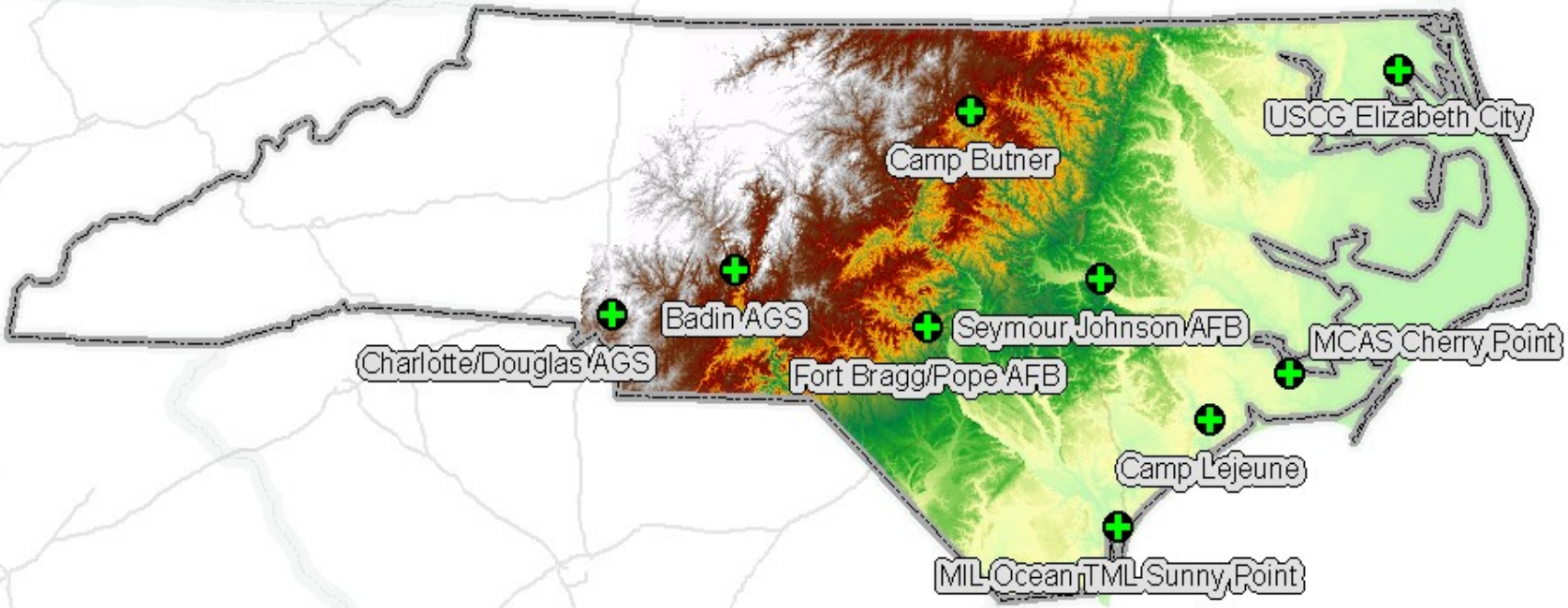
St. Mere Eglise

Early Successes

Transportation/Air Quality Team

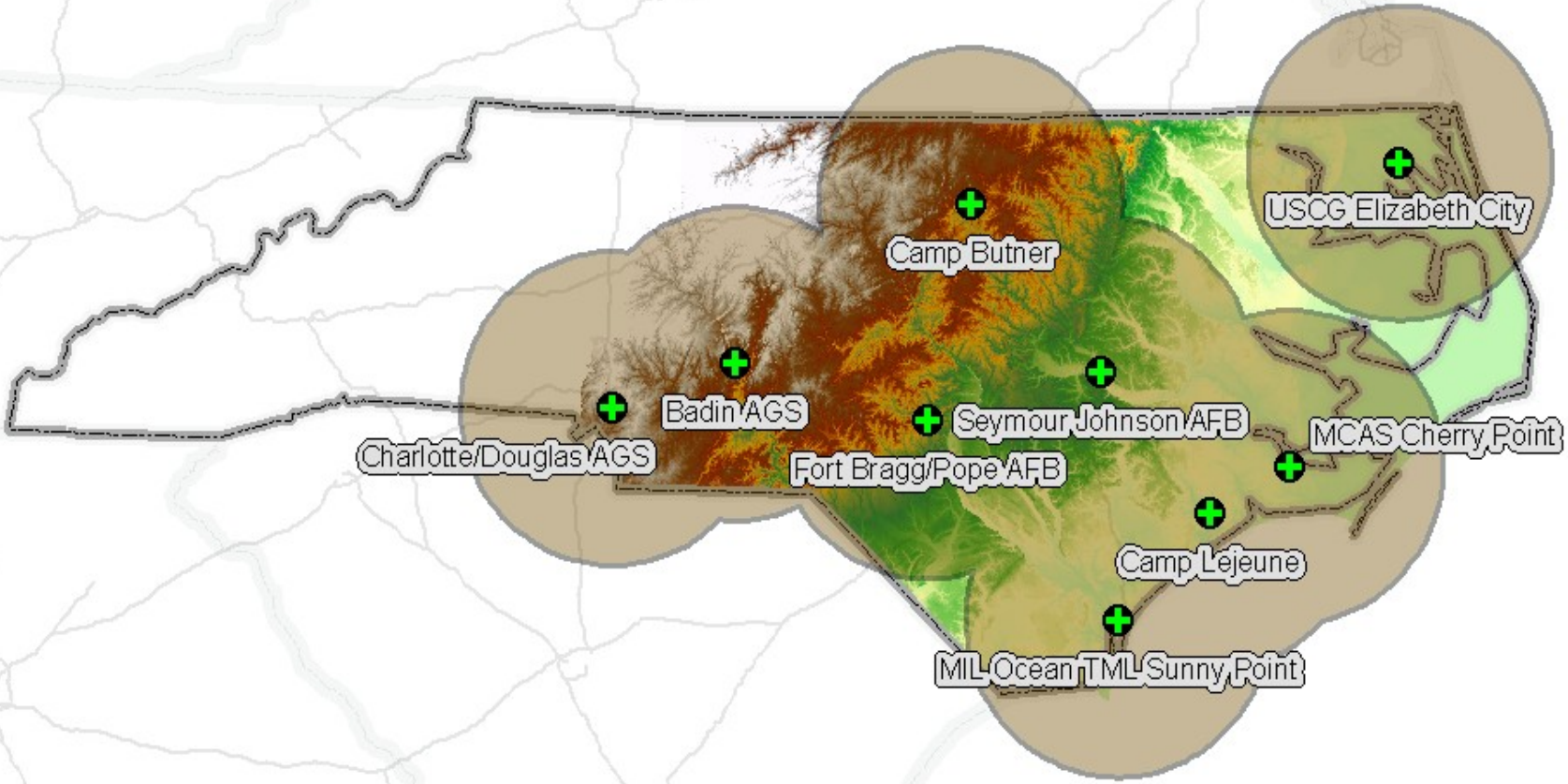
- Converted Range Control Vehicles to B20 (20% biodiesel);
- Implementation of an internal bus system to support mobilized reservists
- Participated in Early Action Compact with Cumberland County, NC DENR and EPA
- Bragg School Bus System Awarded -$50K grant to install pollution control device on up to 50 school buses (Diesel-Oxidation Catalysts)

North Carolina Department of Defense Military Installations

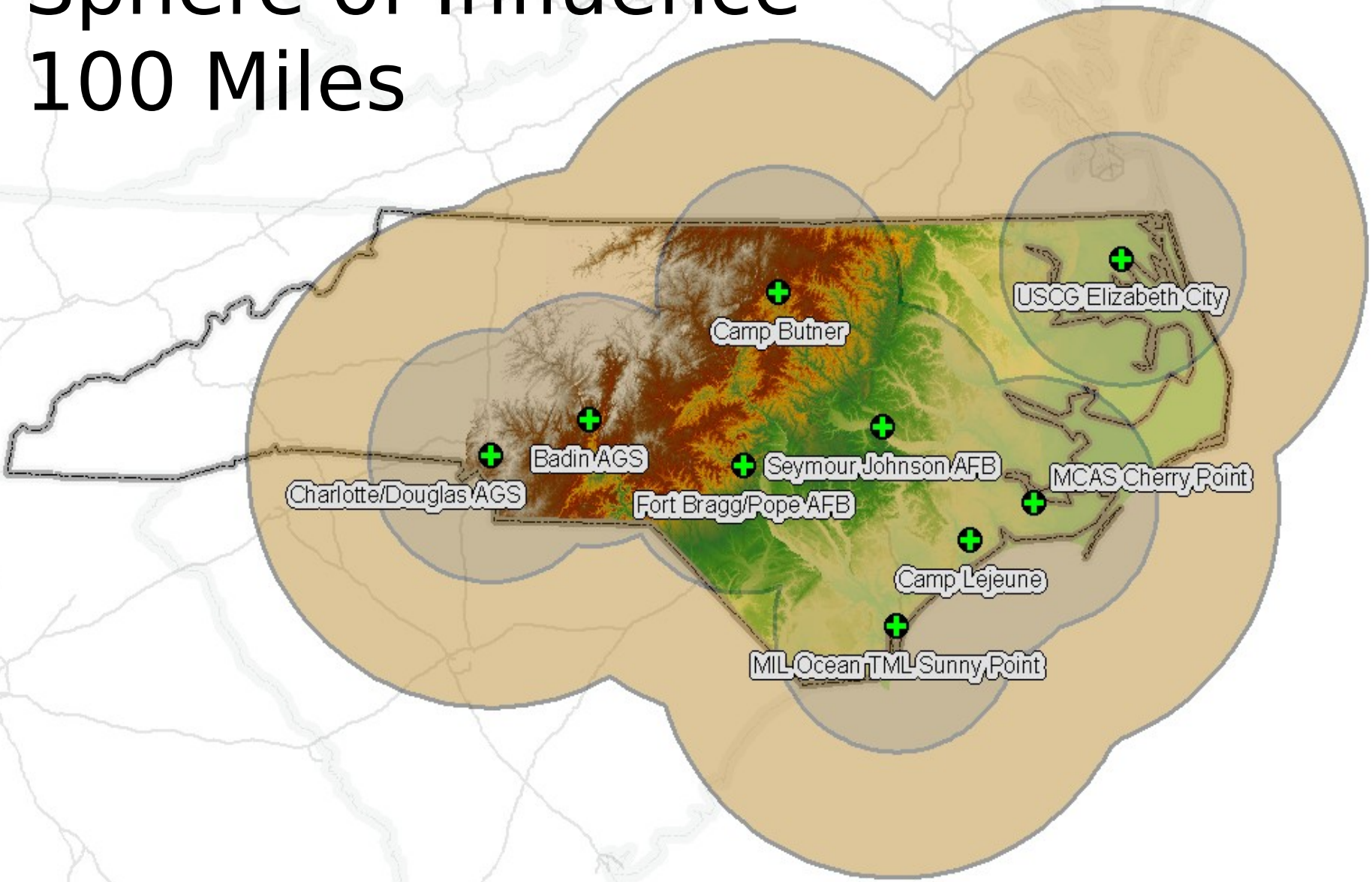


0 50 100 150 Miles

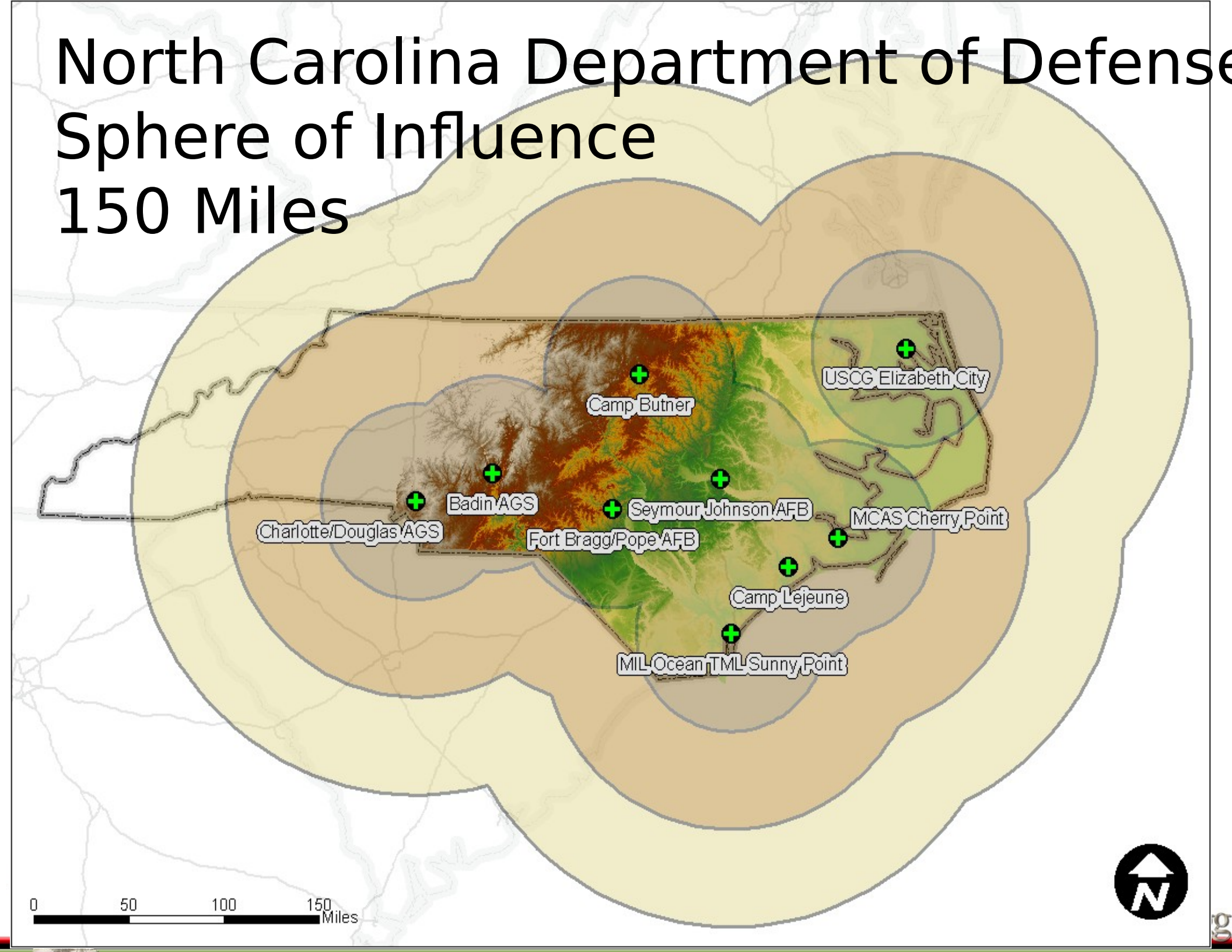
North Carolina Department of Defense
Sphere of Influence
50 Miles

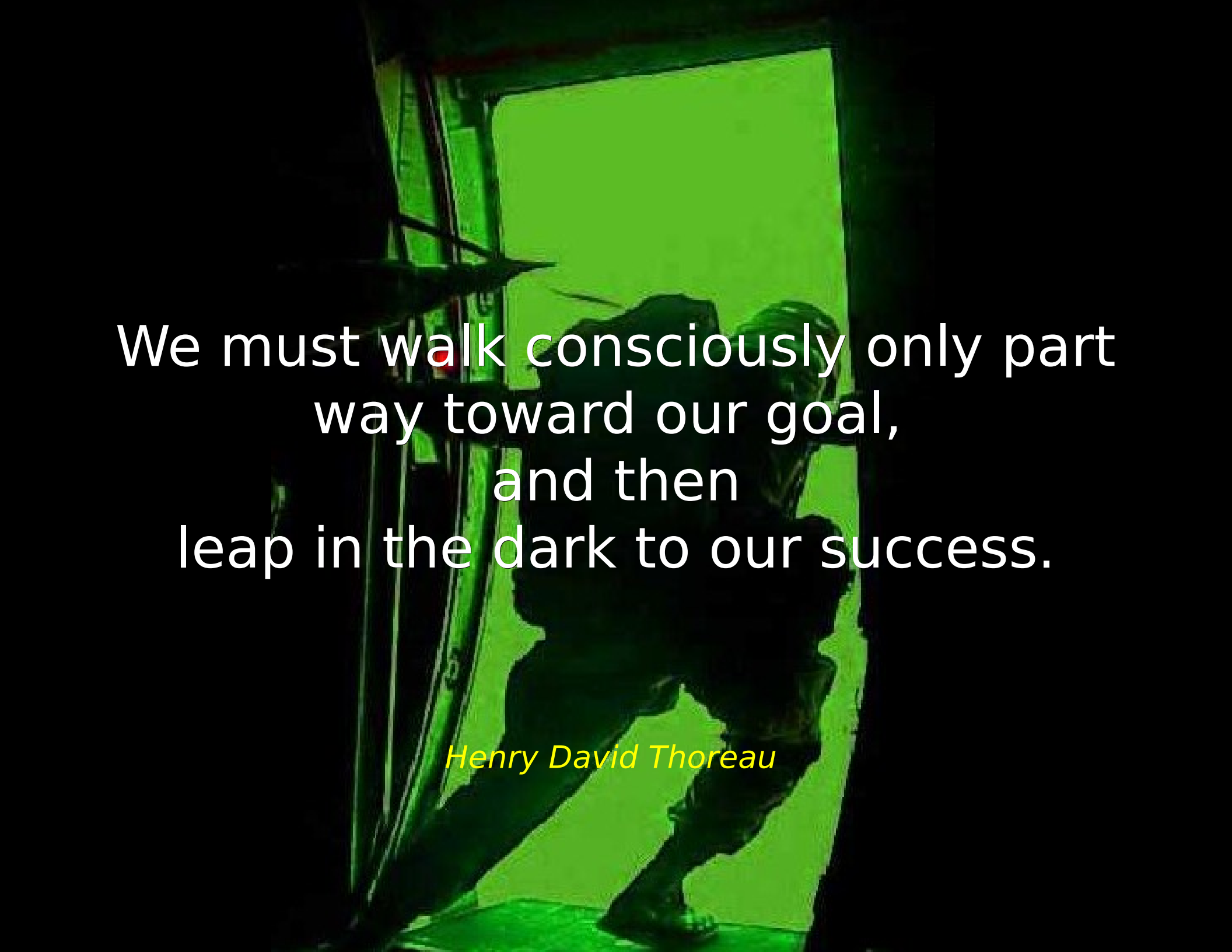


North Carolina Department of Defense
Sphere of Influence
100 Miles



North Carolina Department of Defense
Sphere of Influence
150 Miles




We must walk consciously only part
way toward our goal,
and then
leap in the dark to our success.
Henry David Thoreau